s18quiz: EXP LOG (SLTN v252)
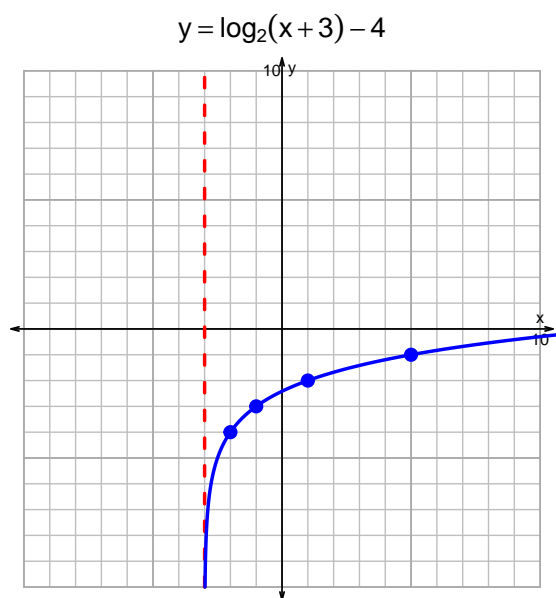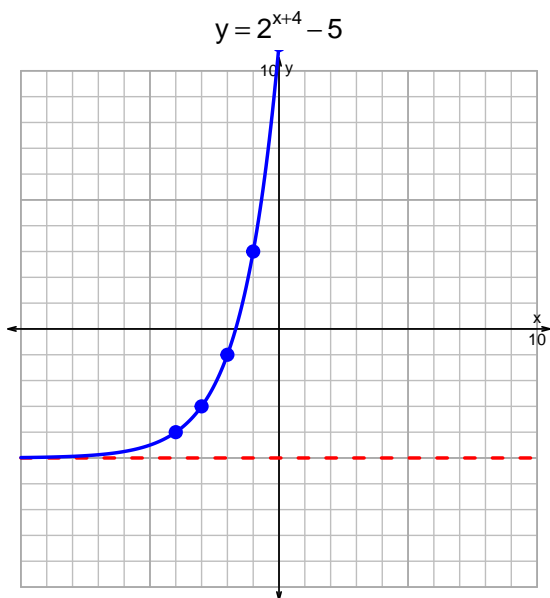
1. Graph $y = 2^{x+4} - 5$ and $y = \log_2(x+3) - 4$ on the grids below. Also, draw any asymptotes with dotted lines.

$$y = 2^{x+4} - 5$$

$$y = \log_2(x+3) - 4$$

2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{7}{5}\right) \cdot 2^{-4t/3}$$

Divide both sides by $\frac{7}{5}$.

$$\frac{11 \cdot 5}{7} = 2^{-4t/3}$$

Take log, base 2, of both sides.

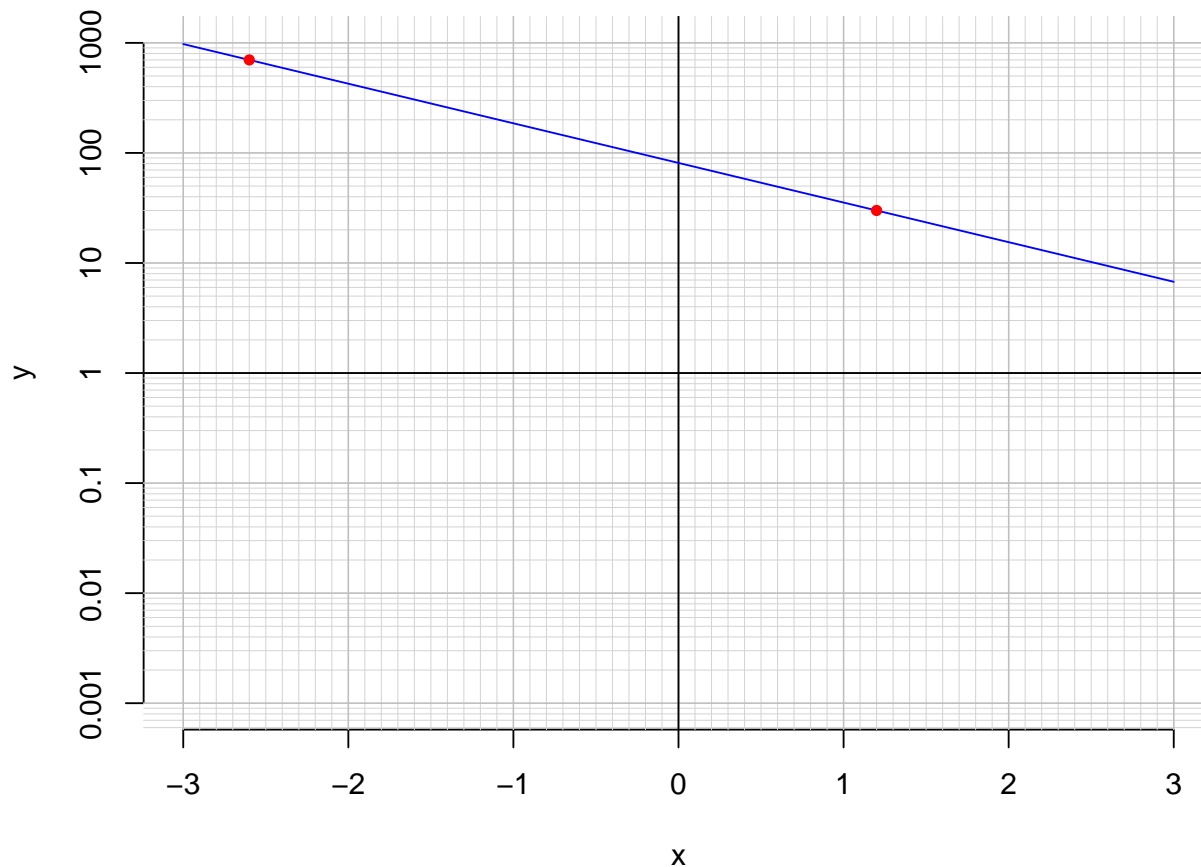$$\log_2\left(\frac{11 \cdot 5}{7}\right) = \frac{-4t}{3}$$

Divide both sides by $\frac{-4}{3}$.

$$\frac{-3}{4} \cdot \log_2\left(\frac{11 \cdot 5}{7}\right) = t$$

Switch sides.

$$t = \frac{-3}{4} \cdot \log_2\left(\frac{11 \cdot 5}{7}\right)$$

3. An exponential function $f(x) = 81.1 \cdot e^{-0.829x}$ is graphed below on a semi-log plot.

a. Using the plot above, evaluate $f(-2.6)$.

$$f(-2.6) = 700$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{0.829} \cdot \ln\left(\frac{x}{81.1}\right)$$

c. Using the plot above, evaluate $f^{-1}(30)$.

$$f^{-1}(30) = 1.2$$